



GuruGuides, LLC

www.guruguides.com  
720.840.4343  
training@guruguides.com



## Introduction to Server-Side Java™ for Programmers Course Outline

**10 % off**

all Courseware purchased  
before 6/25/2003. See  
<http://www.guruguides.com>  
for details.

### Section 1: Java Overview

- A Brief Description of Java™
- Benefits of Java™
- Object-Oriented Programming
- The Java™ Virtual Machine
- Platform Independence
- Security
- Performance
- Java™ 2 Software Development Kit (SDK)
  - Downloading and Installing the Java 2 Software Development Kit
  - Setting Up Your Environment
- Hello World
- The main() Method
- Comments

### Section 2: Java Basics

- Data Types
  - The Primitive Types
  - The Unicode Character Set
- Identifiers and Variables
- Keywords
- Declaring Variables
- Local Variable Initialization
- Strings
- Statements
- Operators
  - The Arithmetic Operators
  - The Comparison Operators
  - The Logical Operators
  - The Bitwise Operators
- Expression Evaluation
- Operator Precedence
- Associativity and Explicit Grouping
- Blocks
  - Scope
  - Nested Blocks and Scopes
  - Variable Naming

### Section 3: Objects and Classes

- The Object Model
- Type
- Object References
- Advantages of Object-Oriented Programming
- Classes and Class Definitions
- Primitives and Memory Allocation
- Primitives and Wrapper Classes
- Assignment
- Object Comparison
- null
- Instance Variables
- Behavior and Methods
- Method Arguments
- Invoking Methods
- Setting Instance Data with Methods
- Method Return Values
- Local Variables
- The this Variable and Instance Data
- Variable Scope and Lifetime
- Encapsulation
- Access Control Modifiers
- Method Overloading

### Section 4: Flow of Control

- Program Execution Sequence in Java
- if-else Statement
- switch Statement
- do-while Statement
- for Statement
- break Statement
- continue Statement

### Section 5: Classes, Strings, and Arrays

- Constructors
  - No-Argument Constructor
  - Object Initialization
  - Calling One Constructor from Another
- Arrays
  - Accessing Array Elements
  - Array Length
  - Arrays of Class Types, Arrays of Arrays
- Class String
  - Using Strings
- Static Data Members
  - Accessing Static Data Members
- Static Methods
  - Invoking Static Methods
  - Accessing Data in Static Methods
- Final Variables

### Section 6: Packages and Access Protection

- Packages
  - Accessing Package Members
  - Fully Qualified Names
  - Importing a Single Package Member
  - Importing a Complete Package
  - Creating Packages
- Package Scope
  - The Default Package
- Standard Imports
- Naming Conventions
- Resolving Naming Conflicts
- Access Control for Classes
- Access Control for Class Members
- CLASSPATH

### Section 7: Inheritance

- Characteristics of Inheritance
- The extends Keyword
- Inheriting Superclass Data Members
- Inheriting Superclass Member and Methods
- The super Keyword
- Shadowing Superclass Data Members
- Constructors and Inheritance
- Final Classes
  - protected Access
- Overriding Superclass Methods
- Polymorphism
  - Method Signatures and Overriding
- Access Control and Overriding
- Private Methods and Overriding
- Class Object
  - Automatic Storage Management
- Inheritance and Casting
- Abstract Classes

### Section 8: Interfaces

- Interface Types
- Interface Definitions
- Method Declarations
- Data Members in Interfaces
- The implements Keyword
- Implementing Multiple Interfaces
- Extending Interfaces
- Example of Using Interface Types

### Section 9: Exceptions

- Overview of Exceptions
- Class Throwable
- Class Exception
- Handling Exceptions with try and catch
- Exceptions and Program Flow
- Throwing Exceptions
- User-Defined Exceptions
- Multiple catch Clauses
- finally Clause
- More on Program Flow
- Declaring Exceptions That a Method Throws
- When to Declare Exceptions
- Required Exception Declarations
- Checked Exceptions

### Section 10: Streams

- Overview of Streams
- Character Streams
- Class Reader
- Class Writer
- Common Reader and Writer Subclasses
- Using Readers and Writers
- F filter Streams
- Filtering Example
- Using Filters
- 1.0 Byte Stream Classes
- Common Byte Stream Classes
- Converting Between Byte and Character Streams
- API Overview
- The File Class
- Path Separators

### Section 11: Multi-threading

- Overview of Multi-threading in Java
- Why Threads?
- Single- vs. Multi-threaded Program Flow
- The Thread Class
- Creating Threads
- The Runnable Interface
- A Simple Example
- Methods of the Thread Class
- Controlling Thread Execution
- Thread Scheduling
- Preemptive vs. Cooperative Multi-threading
- The yield() Method
- Costs of Multi-threading
- Synchronization
- The synchronized Keyword



GuruGuides, LLC

www.guruguides.com  
720.840.4343  
training@guruguides.com



## Introduction to Server-Side Java™ for Programmers Course Outline

**10 % off**

all Courseware purchased  
before 6/25/2003. See  
<http://www.guruguides.com>  
for details.

**Section 12: Overview of HTML and HTTP**

Web Clients and Servers  
Establishing a Connection  
What's in a URL?  
HTML: The Language of the Web  
A Basic HTML Page  
HTML Tags  
An Overview of HTTP  
HTTP: The Web's Protocol  
Sending Parameters  
The HTTP GET  
The HTTP POST  
How Does HTTP Impact Me?  
Overview of the MVC Architecture

**Section 13: Tomcat Installation and Configuration**

Installing and Running Tomcat  
Setting up Your Environment

**Section 14: Web Applications**

Building A Web Application  
Web Application Structure  
web.xml  
Packaging Web Applications

**Section 15: Servlets**

The Need For Servlets  
Alternatives to Servlets  
The Servlet Container  
Required Packages  
Interfaces and Classes  
Interface `javax.servlet.Servlet`  
`javax.servlet.ServletConfig`  
`javax.servlet.GenericServlet`  
`javax.servlet.http.HttpServlet`  
A Basic Servlet  
Mapping Servlets in web.xml  
Executing the Servlet  
The Servlet Life Cycle  
The Request/Response Cycle  
`service()`, `doGet()` and `doPost()`  
Passing Parameters to a Servlet  
Retrieving Data from the Browser  
Cooperative Servlets

**Section 16: Communication between Servlets**

The ServletContext  
The Request Dispatcher  
`Request.getRequestDispatcher()`  
`ServletContext.getRequestDispatcher()`  
Includes  
Forwards  
Redirects  
Http Error Codes

**Section 17: Sessions and Cookies**

Cookie Overview  
Persistence of Cookies  
Viewing Cookies  
`javax.servlet.http.Cookie`  
Setting Persistent Cookies  
How Cookies are Sent  
Retrieving a Cookie

**Section 18: Sessions**

The Need For Sessions  
How Sessions Work  
`javax.servlet.http.HttpSession`

**Section 19: Sharing Data Among Servlets**

Scope  
The Request  
The Session  
The ServletContext

**Section 20: JavaServer Pages**

Overview of JSPs  
JSPs as Servlets  
JSP Tags  
Expressions  
Scriptlets  
Directives  
Declarations  
Comments

**Section 21: JSP Actions**

`include`  
`forward`  
Implicit JSP Objects  
`request`  
`response`  
`out`  
`session`  
`exception`

**Section 22: JSP Custom Tags**